**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants: Pickover et al.  
Serial No: 09/612,006  
For: SYSTEM AND METHOD FOR IMPROVED SPELL  
CHECKER  
Filed: JULY 7, 2000  
Examiner: QUELER, ADAM M.  
Art Unit: 2178  
Confirmation No.: 7649  
Customer No.: 27623

Docket No.: YO999-467

**DECLARATION UNDER 37 C.F.R. §1.131(b)**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Clifford Alan Pickover and Alexander Zlatsin, applicants in the above-identified patent application, declare as follows:

1. That sometime prior to March 28, 2000, we conceived of, and thereafter reduced to practice, a method of spell checking a document being processed by a word processing program, the method comprising: (a) determining from a content of the document a group of words that includes words actually occurring in the document; (b) reporting a misspelled word to a user; and (c) presenting to the user a list of replacement words that have spellings similar to the misspelled word, the list including one or more words selected from the group of words.

2. That sometime prior to March 28, 2000, we conceived of, and thereafter reduced to practice, a computer readable medium that includes computer executable instructions for performing steps, comprising: (a) determining from a content of the document a group of words that includes words actually occurring

Serial No. 09/612,006

Art Unit: 2179

in the document; (b) reporting a misspelled word to a user; and (c) presenting to the user a list of replacement words that have spellings similar to the misspelled word, the list including one or more words selected from the group of words.

3. Attached hereto is Exhibit A that is an Invention Disclosure dated sometime prior to March 28, 2000, that is evidence of the present invention, i.e., a method of spell checking a document being processed by a word processing program, and a computer readable medium.

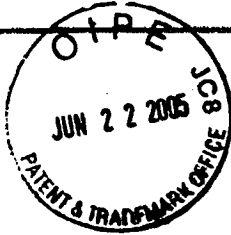
4. We further declare that all statements made herein of our knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Declared at YORK TOWN HTS, NY, U.S.A. this 6-20-05 day of June, 2005.

Clifford Alan Pickover  
Clifford Alan Pickover

Declared at \_\_\_\_\_, U.S.A. this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

\_\_\_\_\_  
Alexander Zlatsin



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3. Attached hereto is Exhibit A that is an Invention Disclosure dated sometime prior to March 28, 2000, that is evidence of the present invention, i.e., a method of spell checking a document being processed by a word processing program, and a computer readable medium.

4. We further declare that all statements made herein of our knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Declared at \_\_\_\_\_, U.S.A. this \_\_\_\_ day of \_\_\_\_\_, 2005.

\_\_\_\_\_  
Clifford Alan Pickover

Declared at Port Washington, NY, U.S.A. this 20 day of June, 2005.

Alexander Zlatsin  
Alexander Zlatsin

# Exhibit A



## Disclosure

Created By: \_\_\_\_\_  
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\*\*\* IBM Confidential \*\*\*

Required fields are marked with the asterisk (\*) and must be filled in to complete the form.

### Summary

Status	Submitted
Processing Location	
Functional Area	
Attorney/Patent Professional	
IDT Team	
Submitted Date	
Owning Division	<input type="button" value="Add/Change"/>
PVT Score	

### Inventors with Lotus Notes IDs

Inventors: Alex Zlatsin/Watson/IBM, Cliff Pickover/Watson/IBM

Inventor Name > denotes primary contact	Inventor Serial	Div/Dept	Manager Serial	Manager Name

### Inventors without Lotus Notes IDs

#### IDT Selection

IDT Team:	Attorney/Patent Professional:
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### Main Idea

#### \*Title of disclosure (In English)

A system and method for an improved spell checker

#### \*Idea of disclosure

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

The present invention provides a method and system for correcting the spelling of words. A primary use of computers, especially personal computers, is "word processing." Word processors have replaced the typewriter as a principal means for document production. In producing documents, it is typically very important that each word is spelled correctly. In word processors, a spell checking program (spell checker) is often used to check the spelling of words in a document. A spell checker has an associated dictionary file that contains a list of correctly spelled words. To check the spelling of a word in the document, the spell checker searches the dictionary for

that word. If the word is in the dictionary, then the word is correctly spelled. Otherwise, the word is misspelled. The spell checker typically reports misspelling to the user and prompts for the correct spelling. This prompting often involves a selectable list of similarly spelled words that the user may select from. The spell checker then replaces the misspelled words with the correctly spelled word.

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?

A system and method for an improved spell checker

The present invention provides a method and system for correcting the spelling of words. A primary use of computers, especially personal computers, is "word processing." Word processors have replaced the typewriter as a principal means for document production. In producing documents, it is typically very important that each word is spelled correctly. In word processors, a spell checking program (spell checker) is often used to check the spelling of words in a document. A spell checker has an associated dictionary file that contains a list of correctly spelled words. To check the spelling of a word in the document, the spell checker searches the dictionary for that word. If the word is in the dictionary, then the word is correctly spelled. Otherwise, the word is misspelled. The spell checker typically reports misspelling to the user and prompts for the correct spelling. This prompting often involves a selectable list of similarly spelled words that the user may select from. The spell checker then replaces the misspelled words with the correctly spelled word.

Spell checking is also provided at various web pages, such as the popular Alta Vista web site which provides alternate spellings to words that are misspelled when searching for information on the web. A system and method for an improved spell checker is therefore not only useful for word processors but also in any arenas in which text is typed, such as in web search engines.

Disclosed here is an improved spell checker.

A. An improved spell checker determines the "content" or "topic" of a document either by keywords in the document, keywords in the title, number of times words are used in a document, latent semantic indexing, or by other methods. This information is used to improve spell checking.

Example: The word "divination" is in the document's title. The words also appears 30 times in the document. It is likely an important word that relates to the the document's "content."

If I misspell divination as duvonaton the spell checker should first present the word divination as a possible correctly spelled word before it presents other possibilities, like deviation.

B. Additionally, if the spell checker determines that "divination" is the content of the document, or is important, by one or more means, the spell checker will use latent semantic indexing and/or synonyms or other methods to determine that OTHER words such as "fortune-telling" may be in the document and therefore present these probably-related words first in lists of alternate words.

Example: the misspelled word "fotune-telling" is probably "fortune-telling" because fortune-telling is a word related to divination which is the topic.

C. The improved spell checker also checks for "nearby" keys on the keyboard to improve the spell checker.

Example: the word loce is probably love because the "v" key is adjacent to the "c" key. The system presents a list of valid words with these likely substitutions.

The system also monitor's a user's history of use with respect to nearby key substitutions and considers this information when presenting lists of alternative words.

Example: if the user often types "v" instead of the nearby correct "c", this is considered when determining a likely list of correct words to replace the misspelled word.

A user may supply this information manually. For example, if a user knows that he often types v instead of c, he may notify the system of this so that it may consider this information when presenting a list of correct worlds to replace the misspelled word. This also applies to "key swaps." For example, a user may frequently swap the letters "is" so that he types "si" when he means "is" or "is" when he means "si." The system may automatically track these swaps or a user may manually notify the system that these swaps are likely to occur.

D. The improved spell checker also corrects spelling by monitoring a user's history of spell check corrections. In a sense, the system learns about the user's misspelling patterns by monitoring the number and nature of past selected corrections for words spell checked by a user. This information may be stored in a correction table.

Example: if a user frequently misspells behavior as behavoir, and makes this correction via the spell checker in past uses, the spell checker uses this information to efficiently present lists of alternative correctly-spelled words.

(Aggregate tables of corrections for more than one user may be maintained, shared, and provided by spell checkers, although a personalized table of corrections representing the mistakes and corrections of a single spell check user may be the most useful.)

The aforementioned methods of improving spell checking may be used alone or performed sequentially as a sequence of checks. Various priorities may be used so that one approach is given favor over another. For example, if a higher-priority method gives a list of three alternatives and a lower-priority method gives one alternative,



the higher-priority alternatives are listed before the lower-priority alternatives. The priorities may be determined by manual input of a user or automatically provided by the system software.

An improved spell checker may also provide an auxiliary window that shows a user's most-frequently misspelled words. The user can use a mouse to copy and paste words of interest from the auxiliary window to a current document using the "clipboard" provided with many operating systems. For example, in a windowing environment such as Microsoft Windows 95 or the Macintosh Finder, a temporary storage area in memory ("the clipboard memory") exists to which material is cut or copied from a document. The material is stored until the user pastes the material somewhere else.

Example: the system determines that a user often misspells the words: behavior, structure, and composition. These words are listed in the auxiliary window. The user may copy and paste, or drag and drop, the words as needed. Seeing the correct words on the screen may also have educative value, reinforcing in the user's mind the correct spelling for each word.

Note that although examples have been given with respect to keyboard input, the methods presented here may apply to systems with speech input and handwriting recognition. Therefore, the system and method can also be used to improve handwriting and speech recognition.

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.

**\*Critical Questions ( Questions 1 - 7 must be answered)**

<b>*Question 1</b>	
On what date was the invention workable? <input type="text"/> Please format the date as MM/DD/YYYY (Workable means i.e. when you know that your design will solve the problem)	
<b>*Question 2</b>	
Is there any planned or actual publication or disclosure of your invention to anyone outside IBM?	<input type="radio"/> Yes <input checked="" type="radio"/> No
If yes, Enter the name of each publication or patent and the date published below.	
Publication/Patent	
Date Published or Issued	
Are you aware of any publications, products or patents that relate to this invention?	<input type="radio"/> Yes <input checked="" type="radio"/> No
If yes, Enter the name of each publication or patent and the date published below.	
Publication/Patent	
Date Published or Issued	

<b>*Question 3</b>		<input type="radio"/> Yes
Has the subject matter of the invention or a product incorporating the invention been sold, used internally in manufacturing, announced for sale, or included in a proposal?		<input checked="" type="radio"/> No
Is a sale, use in manufacturing, product announcement, or proposal planned?		<input type="radio"/> Yes
		<input checked="" type="radio"/> No
If Yes, identify the product if known and indicate the date or planned date of sale, announcements, or proposal and to whom the sale, announcement or proposal has been or will be made.		
Product:		
Version/Release:		
Code Name:		
Date:		
To Whom:		
If more than one, use cut and paste and append as necessary in the field provided.		

<b>*Question 4</b>		<input type="radio"/> Yes
Was the subject matter of your invention or a product incorporating your invention used in public, e.g., outside IBM or in the presence of non-IBMers?		<input checked="" type="radio"/> No
If yes, give a date. Please format the date as MM/DD/YYYY		

<b>*Question 5</b>		<input type="radio"/> Yes
Have you ever discussed your invention with others not employed at IBM?		<input checked="" type="radio"/> No
If yes, identify individuals and date discussed. Fill in the text area with the following information, the names of the individuals, the employer, date discussed, under CDA, and CDA #.		

<b>*Question 6</b>		<input type="radio"/> Yes
Was the invention, in any way, started or developed under a government contract or project?		<input checked="" type="radio"/> No
		<input type="radio"/> Not sure
If Yes, enter the contract number		

<b>*Question 7</b>		<input type="radio"/> Yes
Was the invention made in the course of any alliance, joint development or other contract activities?		<input checked="" type="radio"/> No
		<input type="radio"/> Not Sure
If Yes, enter the following Name of Alliance, Contractor or Joint Developer		
Contract ID number		
Relationship contact name		
Relationship contact E-mail		
Relationship contact phone		

<b>Question 8</b>		<input type="radio"/> Yes
Have you submitted, or are you aware of, any related disclosure submission?		<input checked="" type="radio"/> No
If Yes, please provide the title and docket or disclosure number below:		

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**Patent Value Tool (Optional - this may be used by the Inventor and attorney to assist with the evaluation)**

(The Patent Value tool can be used by you or the evaluation team to determine the potential licensing value of your invention.)

These are the answers which were entered into the **Patent Value Tool**.

**Market**

What is the anticipated annual market size (in dollars) that will be captured by your invention?

**Question 1** - How new is the technical field?

**Question 2** - How central is the invention to the product(s) which might be expected to contain the invention?

**Question 3** - What is the scope of the claim?

**PORTFOLIO NEED**

[View PPM Needs List](#)

What are the portfolio needs in the area of your invention?  
Listed in PPM Needs

**EXPLOITATION & ENFORCEMENT**

**Question 1** - How easily can the use of the invention by a competitor be detected?

**Question 2** - How easily can the use of the invention be avoided by a competitor?

**BUSINESS VALUE**

**Question 1** - What percentage of the companies producing products in the field of this invention might use this invention?

**Question 2** - What is the value of this patent to current or anticipated Alliance Activity between IBM and other companies?

**Question 3** - What is the value of this patent to current or anticipated Technology Transfer Activity between IBM and other companies?

**Question 4 - Does it result in prestige to IBM?**

**Post Disclosure Text & Drawings**

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